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ABSTRACT

The purpose of this experiment was to investigate the effect of the experimenter and the type of rating scales on indices of cognitive complexity and extremity of ratings. Starting from the notion of implicit theory of personality and Kelly's personal construct theory, it has been assumed that a person's individual constructs would be more meaningful than scales provided by the experimenter in ratings of other people, since the individual constructs best represent those dimensions that a person habitually uses in his interpretations of the social environment. In the present study four indices of cognitive complexity and one index of extremity of ratings were used to test the effects of the meaningfulness of constructs. The results did not support the hypothesis that perceptions of other people are characterized by greater complexity when subjects use their own constructs rather than constructs provided by the experimenter. (Author)

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INDIVIDUAL VERSUS PROVIDED CONSTRUCTS, COGNITIVE COMPLEXITY, AND EXTREMITY OF RATINGS IN PERSON PERCEPTION

by

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INDIVIDUAL VERSUS PROVIDED CONSTRUCTS, COGNITIVE COMPLEXITY, AND EXTREMITY OF RATINGS IN PERSON PERCEPTION*

Kuusinen, J., and Nystedt, L. Individual versus provided constructs, cognitive complexity, and extremity of ratings in person perception. Rep. Psychol. Lab., Univer. Stockholm, 1972, No 365. - Bruner and Tagiuri's (1954) concept of implicit personality theory, and Kelly's (1955) theory of personal constructs were used as a basis for a hypothesis that an individual's own constructs mediate more differentiated perceptions of other people than constructs provided by the experimenter. The hypothesis was tested by using four indices of cognitive complexity and one index of extremity of ratings to measure differentiation. The individual constructs were derived by using Reptest. The provided constructs were Semantic Differential and Personality Differential scales. The subjects were 36 psychology students. Two experimenters were employed to control experimenter effects. The data did not support the hypothesis but showed that differences between individual constructs and provided constructs are dependent upon what criterion is chosen to contrast the two types of constructs, what indices are used to measure the chosen criterion, and what type of provided constructs are compared with individual constructs.

Introduction and Problem

Traditionally, an important problem in person perception research has been what traits or constructs people use in perceiving other peoples personalities and what is the structure of these perceptions (e.g., Allport & Odbert, 1936; Hallworth, 1965a, 1965b; Kuusinen, 1970; Lay & Jackson, 1969). The typical strategy in these studies has been the one where the experimenter has provided the subjects with the constructs they were to use, i.e., the experimenter has been interested

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to see how subject perceives people in terms of constructs decided upon by experimenter. Bruner and Tagiuri (1954) may have been the first to introduce the term "implicit theory of personality" in which is included the notion that every man has a characteristic way of construing other people's behavior. According to them the investigation of content and structure of person perception should be directed to these implicit personality theories.

A second theoretical background for criticism of the use of provided constructs in person perception research is Kelly's personal construct psychology (Kelly, 1955). This theory emphasizes the individuality of a person's system of construing events, and claims that every individual interprets himself and the surrounding psychological and physical environment in accordance with his own system of personal constructs. According to Kelly's (1955) theory, in a specific situation, the person selects from an integrated system of personal constructs those constructs which best represent his personal dimensions or through which he anticipates the greater possibility for elaboration of his system. Furthermore it is assumed that each construct is convenient for the anticipation of a finite range of events only.

In studying person perception against the background of Kelly's theory one should study how an individual person perceives other people by using his own personal constructs, not the constructs provided by the experimenter. Bannister and Mair (1968) and Bonarius (1965), among others, have maintained that provided constructs, such as Osgood's Semantic Differential scales (Osgood, Suci & Tannenbaum, 1957), are unsatisfactory and give nonrepresentative information about a person's perception of other people's behavior.

It is the task of empirical research to prove that a person's own constructs are somehow more meaningful to him for indexing his perceptions of other people than constructs provided by the experimenter. There can be many criteria for meaningfulness, and in empirical research one has mostly been interested in comparing individual versus provided constructs in relation to cognitive complexity of a person's perceptions of other people. According to Bieri (1955), and Bieri, Atkins, Briar, Leaman, Miller, and Tripodi (1966), cognitive complexity refers to a person's capacity to construe social behavior or other phenomena in a multidimensional way. The concept reflects the relative differentiation of the system of constructs, i.e., the number of dimensions that a person has available in construing other people's behavior. (Bieri et al., 1966, p. 185). Referring to Kelly's theory and its characterization of the personal construct systems one can assume that it is a person's own constructs that give him the most differentiated view of other people since a person's own construct system should be the most effective way for him to organize the environment.

Empirical studies have not consistently shown that people make cognitively more complex perceptions of other people by using their own constructs than by using constructs provided by the experimenter (cf. Carr, 1965; Tripodi & Bieri, 1963), although this hypothesis has been supported in several studies (Bonarius, 1965; Caine & Smail, 1967; Landfield, 1968). The present study was an attempt to collect more controlled information about the effectiveness of individual constructs in person perception. More specifically, the following problems were seen to require further research.

(1) In contrasting the individual vs. provided constructs as regards to cognitive complexity only one of the several indices of cognitive complexity has been used at the same time (Bonarius, 1965). Vannoy(1965) has, however, shown empirically that cognitive complexity is a multidimensional concept and different indices may measure different aspects of cognitive complexity. Therefore, whether there are differences between own versus provided constructs in cognitive complexity may depend upon what index or indices are used. In the present study, cognitive complexity was indexed by several methods to control the effect of method variance.

(2) Individual constructs have in different studies been compared to such provided constructs that vary as to how relevant they can be regarded for construing other people's behavior. For instance, Semantic Differential scales that Jaspars (see Bieri et al., 1966; Bonarius, 1965) used as provided constructs are not a priori as relevant for ratings of personality as are traits denoting personality that Tripodi and Bieri (1963) and Caine and Smail (1967) used as provided constructs. It can be assumed that differences between own and provided constructs, regarding the degree of complexity of perception of behavior they mediate, may be related to how relevant the provided constructs are a priori, for describing behavior in general. In the present study the own constructs were therefore contrasted with two types of provided constructs: those that can be used to describe behavior in very broad and general terms, namely Osgood's Semantic Differential scales, and those that have been specifically developed for ratings of personality, namely Personality Differential scales (Kuusinen, 1970; Miron & Osgood, 1966).

(3) Individual constructs are elicited by using Kelly's Role Construct Repertory Test (Reptest), either in individual or in group form. Although the empirical evidence is still lacking, the method may be sensitive to experimenter effects (Rosenthal, 1967) as the method requires that the subject reveals rather personal information from himself to the experimenter or forces himself to become conscious of potentially anxiety evoking attitudes towards people who are important to him. To control for possible experimenter effects the present study employed two experimenters each of whom collected half the data.

In the above discussion cognitive complexity was taken as one criterion in contrasting individual and provided constructs. Another criterion that has been applied is the extremity of scale values that a person uses when rating another person's behavior.

In a number of studies conducted by Bonarius (1971) and others (see Cromwell & Caldwell, 1962; Koltuv, 1962; Landfield, 1965; Mitsos, 1961) results have been obtained indicating that the extremity of ratings increases when the meaningfulness of the rating scales increases. Bonarius (1971) has taken these results as an evidence for what he calls "the construct law" in the psychology of personal constructs. The law says that ratings with personal construct scales are more extreme than ratings with provided scales.

To summarize: The purpose of the present study was (a) to compare subjects' individual constructs with constructs provided by the experimenter in relation to how cognitively complex perceptions of other persons' personalities subjects can make by using these two different types of constructs, (b) to compare the extremity of ratings

between the individual and provided constructs, and (c) to study the experimenter effect in relation to indices of cognitive complexity and extremity of ratings.

Method

Subjects

Subjects were 36 psychology students from the University of Stockholm who volunteered for the experiment to fullfill course requirements. 30 of them were women and 6 men. Two graduate students of psychology, both having several years' experience as practicing clinical psychologists, served as experimenters in collecting the Reptest data. Half of the subjects were seen by one and half by the other experimenter. Both experimenters practiced the administration of the test before the data collection.

Individual constructs: Reptest

A standard form of the repertory test (Kelly, 1955) with 15 roles was administered to each subject individually. The roles (1. mother, 2. father, 3. brother, 4. sister, 5. liked teacher, 6. disliked teacher, 7. self, 8. spouse or a friend of opposite sex, 9. disliked boss, 10. rejecting person, 11. attractive person, 12. pitied person, 13. intelligent person, 14. successful person, 15. interesting person) were written on separate cards and the subjects were asked to identify the real persons suggested by the role definitions. Fifteen triads (10, 11, 12; 6, 13, 14; 6, 9, 12; 3, 14, 15; 4, 11, 13; 2, 9, 10; 5, 7, 8; 9, 11, 15; 1, 4, 7; 3, 5, 13; 8, 12, 14; 4, 5, 15; 1, 2, 8; 2, 3, 7; 1, 6, 10) were formed from the roles to elicit fifteen personal constructs. The elicitation was done on a grid form where the subject first indicated the likeness pole and the opposite pole of a construct, and then indicated which other roles also had the characteristic implied by the likeness construct. The subjects also rated their role persons on 7-step scales formed from the likeness pole of their own constructs according to the procedure and instructions given by Bannister and Mair (1968, p. 63). The interval ratings were given at different occasions in a group test situation.

Provided constructs: Semantic Differential

The subjects rated their role persons by using 12 standard 7-step Semantic Differential scales. The scales were (translated from Swedish): 1. nice-nasty, 2. right-erroneous, 3. good-bad, 4. kind-evil (Evaluation), 5. long-short, 6. high-low, 7. bothersome-easy, 8. strong-weak (Potency), 9. active-passive, 10. swift-slow, 11. lively-apathetic, 12. warm-cold (Activity). The Semantic Differential scales originated from a cross-cultural study of affective meaning systems (Jakobovits, 1966; Osgood, 1964).

Provided constructs: Personality Differential

The subjects rated their role persons by using twelve 7-step scales of Personality Differential, originating from a study of Ware (Miron & Osgood, 1966). The scales were (translated from Swedish): 1. tough-tender, 2. insensitive-sensitive, 3. rugged-delicate (Toughness-

dimension), 4. sociable-solitary, 5. gregarious-selfcontained, 6. extroverted-introverted (Sociability-dimension), 7. logical-intuitive, 8. objective-subjective, 9. rational-irrational (Rationality-dimension), 10. moral-immoral, 11. reputable-disreputable, 12. wholesome-unwholesome (Morality-dimension). The Swedish translations of the scales were found in Bjerstedt (1963, p. 83).

Data collection

The data were collected in four sessions. In the first, individual session, the subjects were given the Reptest and the Semantic Differential. The remaining three sessions were group test situations. In the first of these sessions the subjects were given the Personality Differential and administered two tests of social intelligence. In the second session they rated the similarity between all pairs of the 15 role figures on a 5-step scale and were given two tests of spatial ability. In the fourth session the subjects rated the roles by using their own constructs and were given a test of reasoning ability. Similarity ratings and the data of cognitive abilities are not reported in this study.

Relevance ratings

After completing all the instruments the subjects were asked to give ranks (1, 2, 3) to the three set of scales (Individual Constructs, Semantic Differential, Personality Differential) as how relevant each set of scales as a whole was to the rating of the role persons.

Indices of cognitive complexity

Bieri's Index. Bieri's Index (Bieri, 1955, 1961; Bieri et al., 1966) is a measure of cognitive complexity derived from a matrix that has constructs as rows and roles as columns. Each row is compared with each other and the matching of the rows implies cognitive complexity: the more matching, the less complexity. In the present data the index was applied by comparing each element in a row with the corresponding elements in all other rows, and a score of one was given to every exact agreement of ratings of a role person (Bieri et al., 1966, p. 190). The index was derived from the three matrices representing ratings of roles on 7-step scales. Since the value of the index is dependent on the number of rows and columns in a matrix, the final index used was a relation of the index to its maximum value in a given matrix.

Factor analytical indices. The three matrices representing subject's ratings of the roles on 7-step scales were factor analyzed by principal component solution. The number of factors with eigenvalues equal or greater than 1 was used as an index of cognitive complexity: the more factors, the more cognitively complex a person is. The second factor analytical index was the percentage of the first factor variance from the common variance: the greater the percentage, the less complex a person is.

Interaction Variance Measure of cognitive complexity. This measure was taken from Vannoy (1965). It is the ratio of the interaction sum of squares to the total sum of squares from a two-way analysis of variance of each construct-role matrix. A high score indicates sensitivity to differences among different role persons,

i.e., high cognitive complexity.

Index of extremity of ratings

The index employed was the average number of scale intervals between ratings and the middle of the scale (Bonarius, 1971, p. 24, index EX).

Results

Cognitive complexity

The means of the indices are presented in Table 1.

Table 1. Means of the cognitive complexity indices for the construct types.

Index	Construct type		
	Individual Constructs	Semantic Differential	Personality Differential
Bieri's index	0.22	0.21	0.23
Interaction variance measure	0.69	0.65	0.72
Number of factors	4.00	3.42	3.58
First factor percentage	43.92	42.28	37.96

The data were analyzed by a 2 (experimenters) x 3 (type of scales) analysis of variance with repeated measurement of the second factor. Significance tests between single means were performed by using Newman-Keuls procedure (Winer, 1962, pp. 80-85 and 309-310).

Bieri's index. According to the hypothesis, individual constructs should give numerically smaller values than ratings by provided constructs. The results showed that there were no significant differences between the two experimenters ($F = <1.0$, $df = 1/34$, n.s.), nor the sets of scales ($F = 2.48$, $df = 2/68$, $p < .10$). The interaction effect was not significant ($F = <1.0$, $df = 2/68$).

Interaction variance measure. There were no significant differences between the two experimenters ($F = <1.0$, $df = 1/34$, n.s.). If the individual constructs mediated more differentiated perceptions, the means of ratings by own constructs should be higher than those of provided constructs. The main effect of the construct type was significant ($F = 5.67$, $df = 2/68$, $p < .025$). Test of means showed that the difference between Personality Differential ratings and Semantic Differential ratings accounted for the significant main effect. The interaction effect was almost significant ($F = 3.0$, $df = 2/68$, $p < .10$).

Number of factors. The mean number of factors with eigenvalues equal or greater than 1 was identical for the two experimenters (3.67). According to the hypothesis own constructs should produce more factors than provided constructs. The effect of construct type was significant ($F = 6.06$, $df = 2/68$, $p < .01$). Tests of individual means indicated that ratings given by using own constructs resulted in significantly more construct factors than ratings by the Semantic Differential technique. The interaction effect was not significant ($F = 1.61$, $df = 2/68$, n. s.).

Percentage of first factor variance. The two experimenters did not produce significantly different data ($F = < 1.0$, $df = 1/34$, n. s.). The hypothesis was that for the individual constructs the first factor variance should be smaller than for provided constructs. The main effect of construct type was significant ($F = 7.43$, $df = 2/68$, $p < .01$). Tests of means indicated that individual constructs differed significantly from Personality Differential ratings, and Semantic Differential ratings differed significantly from Personality Differential ratings. Contrary to the hypothesis, it was the latter method that mediated the most differentiated structure in terms of the first factor variance measure. The interaction effect was not significant ($F = 2.25$, $df = 2/68$, n. s.).

Relevance ratings

Friedman's two-way analysis of variance (Siegel, 1956, pp. 166-172) was used to test the differences between subjects' ratings of relevance of the individual constructs and provided constructs for the rating of the role persons. Data were analyzed separately for the two experimenters. The results showed that for one experimenter there were no difference in how relevant the subjects had regarded the three sets of constructs ($X_r^2 = 0.36$, $df = 2$, n. s.). For the other experimenter, the subjects had regarded the individual constructs significantly more relevant than the provided constructs ($X_r^2 = 14.20$, $df = 2$, $p < .001$). The sum of the rankings for this experimenter was 43.5, 41.5 and 23 for the Semantic Differential, Personality Differential and Individual Constructs respectively. The difference between the data from the two experimenters was also tested in the following way: For each experimenter the proportion of subjects who considered the Individual Constructs better for rating of persons than the two sets of provided constructs was calculated. The difference between these two independent propositions was tested for significance. The result was significant ($z = 3.33$, $p \leq .001$). Thus, the results indicated that the experimenters had had different effect on subjects' experiences of the relevance of the sets of scales.

Extremity of ratings

The data were analyzed by a 2 (the experimenters) x 3 (type of scales) analysis of variance with repeated measurement on the second factor. The results showed no significant experimenter effect ($F < 1.0$, $df = 1/34$, n. s.). The type of scales had a significant main effect ($F = 6.49$, $df = 2/68$, $p < .005$). The means of the index were: Individual Constructs 21.78, Semantic Differential 21.67, Personality Differential 19.40. The means indicate that the Personality Differential ratings accounted for the significant main effect. The interaction effect was not significant ($F = 1.24$, $df = 2/68$, n. s.).

Summary and Discussion

The purpose of the present experiment was to investigate the effect of the experimenter and the type of rating scales on indices of cognitive complexity and extremity of ratings. Starting from the notion of implicit theory of personality (Bruner & Tagiuri, 1954) and Kelly's (1955) personal construct theory, it has been assumed that a person's individual constructs would be more meaningful than scales provided by the experimenter in ratings of other people, since the individual constructs best represent those dimensions that a person habitually uses in his interpretations of the social environment. In the present study four indices of cognitive complexity and one index of extremity of ratings were used to test the effects of the meaningfulness of constructs.

The results did not support the hypothesis that perceptions of other people are characterized by greater complexity when subjects use their own constructs rather than constructs provided by the experimenter. In case of Bieri's index there were no significant effects. For the interaction variance measure and the index of first factor variance the results were contrary to the hypothesis. As to the index of number of factors, ratings by Individual Constructs gave partial support to the hypothesis as they differed significantly from Semantic Differential ratings but not from the Personality Differential ratings.

Of the provided constructs, Personality Differential scales appeared to mediate more differentiated perceptions of other people than Semantic Differential scales, as was expected. The differences between these two sets of provided constructs were statistically significant in the expected direction in case of the interaction variance and first factor variance measures of cognitive complexity. Since the Personality Differential ratings differed significantly also from ratings by Individual Constructs in case of first factor variance measure, it is possible that earlier findings (see Bonarius, 1965, for a review) that supported the hypothesis about the effectiveness of individual constructs in contrast to provided constructs in cogntive complexity might have been specific to the type of provided constructs, namely Semantic Differential scales that were employed in their studies.

The results of the analysis of the extremity of ratings showed that the Individual Constructs differed significantly in the expected direction from the Personality Differential ratings but not from the Semantic Differential ratings. These results did not fully support earlier findings (Bonarius, 1971; Cromwell & Caldwell, 1962; Landfield, 1965; Mitsos, 1961).

For the ratings of the relevance of the scales, in one experimenter's case the results indicated that the subjects may experience their individual constructs as more meaningful for rating of other people than the provided constructs.

In general the results failed to give evidence to that a person's individual constructs would mediate perceptions of other people that were more differentiated, i.e., showed more cognitive complexity, than constructs provided to him. The results showed that differences between individual constructs and provided constructs that have been found in earlier studies may be dependent upon what criterion is chosen to con-

trast the two types of constructs, what indices are used to measure the chosen criterion, and what type of provided constructs is compared with individual constructs.

References

Allport, G.W., and Odbert, H.S. "Trait names: a psycho-lexical study", Psychological Monograph, 1936, 47, No. 211.

Bannister, D., and Mair, J.M.M. The Evaluation of Personal Constructs. London: Academic Press, 1968.

Bieri, J. Cognitive complexity-simplicity and predictive behavior. Journal of Abnormal and Social Psychology, 1955, 51, 263-268.

Bieri, J. Complexity-simplicity as a personality variable in cognitive and preferential behavior. In D.W. Fiske & S.R. Maddi (Eds.), Functions of Varied Experience. Homewood, Ill.: Dorsey, 1961, pp. 355-379.

Bieri, J., Atkins, A.L., Briar, S., Leaman, R.L., Miller, H., and Tripodi, T. Clinical and Social Judgment: The Discrimination of Behavioral Information. New York: Wiley, 1966.

Bjerstedt, Å. Sociometriska metoder. [Sociometric Methods.] Uppsala: Schildts, 1963.

Bonarius, J.C.J. Research in personal construct theory of George A. Kelly. In B.A. Maher (Ed.), Progress in Experimental Personality Research. London: Academic Press, 1965, vol. 2, pp. 2-46.

Bonarius, J.C.J. Personal Construct Psychology and Extreme Response Style: An Interaction Model of Meaningfulness, Maladjustment and Communication. Amsterdam: Swets & Zeitlinger, 1971.

Bruner, J.S., and Tagiuri, R. Person perception. In G. Lindzey(Ed.), Handbook of Social Psychology. Reading, Mass.: Addison-Wesley, 1954, vol. 2, pp. 634-654.

Caine, T.M., and Smail, D.J. Personal relevance and the choice of constructs for the repertory grid technique. The British Journal of Psychiatry, 1967, 113, 517-520.

Carr, J.E. The role of conceptual organization in interpersonal discrimination. The Journal of Psychology, 1965, 59, 159-176.

Cromwell, R.L., and Caldwell, D.F. A comparison of ratings based on personal constructs of self and others. Journal of Clinical Psychology, 1962, 18, 43-46.

Hallworth, H.J. Dimensions of personality and meaning. British Journal of Social and Clinical Psychology, 1965, 4, 161-168. (a)

Hallworth, H.J. The dimensions of personality among children of school age. The British Journal of Mathematical and Statistical Psychology, 1965, 18, 45-56. (b)

Jakobovits, L.A. Comparative psycholinguistics in the study of cultures. International Journal of Psychology, 1966, 1, 15-37.

Kelly, G.A. The Psychology of Personal Constructs. New York: Norton, 1955, vol. 1.

Koltuv, B.B. Some characteristics of intrajudge trait intercorrelations. Psychological Monographs, 1962, 72, (33, Whole No. 532).

Kuusinen, J. The meaning of another person's personality. Jyväskylä Studies in Education, Psychology and Social Research 21. University of Jyväskylä, 1970.

Landfield, A.W. Meaningfulness of self, ideal and other as related to own versus therapist's personal construct dimensions. Psychological Report, 1965, 16, 605-608.

Landfield, A.W. The extremity of rating revisited within the context of personal construct theory. British Journal of Social and Clinical Psychology, 1968, 7, 135-139.

Lay, C.H., and Jackson, D.N. Analysis of the generality of trait-inferential relationships. Journal of Personality and Social Psychology, 1969, 12, 12-21.

Miron, M.S., and Osgood, C.E. Language behavior: the multivariate structure of qualification. In R.B. Cattell (Ed.), Handbook of Multivariate Experimental Psychology. Chicago: Rand McNally, 1966, pp. 790-819.

Mitsos, S.B. Personal constructs and the semantic differential. Journal of Abnormal and Social Psychology, 1961, 62, 433-434.

Osgood, C.E. Semantic differential technique in the comparative study of cultures. American Anthropologist, 1964, 66, 171-200.

Osgood, C.E., Suci, G.J., and Tannenbaum, P.H. The Measurement of Meaning. Urbana: University of Illinois Press, 1957.

Rosenthal, R. Experimenter Effects in Behavioral Research. New York: Appleton-Century-Crofts, 1967.

Siegel, S. Nonparametric Statistics for the Behavioral Sciences. New York: McGraw-Hill, 1956.

Tripodi, T., and Bieri, J. Cognitive complexity as a function of own and provided constructs. Psychological Reports, 1963, 13, 26.

Vannoy, J.S. Generality of cognitive complexity - simplicity as a personal construct. Journal of Personality and Social Psychology, 1965, 2, 385-396.

Winer, B.J. Statistical Principles in Experimental Design. New York: McGraw-Hill, 1962.